

REMARKS

Claims 1, 25, 30, 49, 52 and 73 have been amended. No new matter has been added. Claims 24 and 72 were previously canceled. Claims 14-23, 25-29, 42-48, 63-71 and 73-77 were previously withdrawn. Claims 1-13, 30-41 and 49-62 are currently pending in this application.

Claims 1, 8-11, 24, 30-32, 39-41, 52, 59-62 and 72 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Mann et al., U.S. Patent No. 6,768,149 ("Mann"). This rejection is respectfully traversed.

Claims 24 and 72 were previously canceled.

Mann fails to disclose all limitations of any of claims 1, 8-11, 30-32, 39-41, 52 and 59-62. As amended, independent claims 1 and 30 each recite, *inter alia*, "a first transistor adjacent to the photo-conversion device, the first transistor comprising a gate electrode and a channel region under the gate electrode, the gate electrode having a length extending from a source/drain region to the photo-conversion device and comprising at least one gate region extending the length of the gate electrode and having a substantially uniform dopant type and concentration and a work-function greater than a work-function of n+ Si, the channel region comprising at least one channel portion under the-at least one gate region." Similarly, amended independent claim 52 recites, *inter alia*, "forming the gate electrode having a length extending from a source/drain region to the photo-conversion device and forming at least one gate region extending the length of the gate electrode and having a substantially uniform dopant type and concentration and a work-function greater than a work-function of n+ Si" and "forming at least one channel portion under the at least one gate region."

Mann relates to a sensor having a photodetector and a transistor acting as a reset switch. Mann at col. 3, lines 1-3. The transistor is formed with a transistor having a gate with p and n-type regions 312, 314. Regarding Mann's n-type region 312, Mann states only that it has an "n-type" conductivity, not that the region is a lightly doped "n-" region as asserted by the Office Action. Applicant submits that it is well known that the term "n-type" indicates the conductivity type rather than a dopant concentration. Mann further shows the n-type region of the gate 312 is adjacent the source 306 and the p-type region 314 is adjacent the drain 308. Therefore, each of the regions 312, 314 extends across only a portion of the length of the gate. Mann at FIG. 3; see also, Mann at FIG. 1. Accordingly, Mann does not disclose "at least one gate region extending the length of the gate electrode and having a substantially uniform dopant type and concentration and a work-function greater than a work-function of n+ Si," as recited by claims 1 and 30; or "forming at least one gate region extending the length of the gate electrode and having a substantially uniform dopant type and concentration and a work-function greater than a work-function of n+ Si," as recited by claim 52. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 2, 7, 12, 13, 33, 38, 53 and 58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mann. This rejection is respectfully traversed.

As discussed above, Mann fails to disclose, teach or suggest all limitations of any of independent claims 1, 30 and 52. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 3-6, 34-37 and 54-47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mann in view of Ponomarev (Gate-Work-function Engineering Using Poly-(Si,Ge) for High Performance 0.18 μm CMOS Technology, IDEM 1997). This rejection is respectfully traversed.

As discussed above, Mann fails to disclose, teach or suggest all limitations of any of independent claims 1, 30 and 52. Ponomarev is cited for teaching a gate comprising a mid-gap material including SiGe. Ponomarev, however, does not supplement the deficiencies of Mann. Therefore, even when considered in combination, Mann and Ponomarev fail to teach or suggest all limitations of any of independent claims 1, 30 and 52. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 49-51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mann in view of Boon, U.S. Patent No. 6,198,087 ("Boon"). This rejection is respectfully traversed.

Independent claim 49 recites a processor system. Like claims 1 and 30, as amended, independent claim 49 recites *inter alia*, a "gate electrode having a length extending from a source/drain region to the photo-conversion device and comprising at least one gate region extending the length of the gate electrode and having a substantially uniform dopant type and concentration and a work-function greater than a work-function of n+ Si, the channel region comprising at least one channel portion under the-at least one gate region first and second gate regions each having a work-function greater than a work-function of n+ Si."

For at least the same reasons discussed above, Mann fails to disclose, teach or suggest at least the above noted limitations of independent claim 49. Boon is cited for teaching a processor and an image sensor coupled to the processor. Boon, however, does not supplement the deficiencies of Mann. Therefore, even when considered in combination, Mann and Boon fail to teach or suggest all limitations of any of independent claim 49. For at least these reasons, withdrawal of this rejection is respectfully requested.

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In view of the above amendment, applicant believes the pending application is in condition for allowance.

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